

## **REMARKS**

Claims 1-18 are pending in this application.

Claims 1, 2, 6, 7, 9 and 11 are rejected.

Claims 3-5, 8 and 11 are objected to.

Claims 12-18 have been added to the application. These claims introduce no new matter, and support for these new claims can be found throughout the specification, claims and drawings as originally filed.

Claims 6 and 7 have been amended. Support for these amendments can be found throughout the specification, claims, and drawings, as originally filed.

Applicant respectfully requests reconsideration of the Examiner's rejections in view of the above amendments and the remarks set forth below.

### **Rejection of Claims 6 and 7 Under 35 U.S.C. § 112**

Claims 6 and 7 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Office Action rejected claims 6 and 7 based on the phrase "...switch member is arranged to not operate said motor when...period of time" being a negative limitation. Applicant has amended claims 6 and 7 to correct this defect. Applicant respectfully requests removal of the rejection of claims 6 and 7 and allowance thereof.

### **Rejection of Claims 1, 2, 9 and 11 Under 35 U.S.C. § 103(a)**

The Office Action rejected claims 1, 2, 9 and 11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,749,931 (hereinafter referred to as Kegel) in view of U.S. Patent No. 4,341,985 (hereinafter referred to as Houskamp). It was stated

that Kegel discloses a motor control unit for a DC motor having a pair of DC inputs supplied from negative and positive current sources wherein the motor is actuated. The Office Action further states that Kegel also teaches a control circuit comprising a pair of unipolar control circuits wherein at least one unipolar control circuit is connected between a respective current source and a current input to the motor. It was also pointed out that Kegel lacks a motor operating in one of two directions. Houskamp was relied on by the Examiner for disclosing a motor that operates in the forward and reverse directions.

Applicant respectfully traverses the rejection of claims 1, 2, 9 and 11 under 35 U.S.C. § 103(a). Fig. 1 of Kegel shows a motor coil (L) controlled by a switch (S) that is connected to two sources (U1 and U2). Applicant contends that Kegel does not teach or suggest "a pair of unipolar control circuits wherein one of said unipolar control circuits is connected between one of said current sources and a current input to said motor and the other unipolar control circuit is connected between said other current source and another input to said motor." As stated above Kegel uses two current sources and one circuit to control the motor in both directions. For example, col. 2, lines 8-15 describes:

a coil current control device, particularly for controlling a stepping motor coil current, includes a coil which can be alternatively energized by a positive first current source or a negative second current source respectively, **switching means** for connecting said coil to said first current source under the control of a binary control signal at a first level or to said second current source under the control of that binary control signal...

The first claim of Kegel states in pertinent part "...switching means (S) for connecting said coil to said first voltage source by means of a first level of binary control signal (b), or to said second voltage source by means of a second level of said binary control signal..." Figure 1 of Kegel shows the switching means S being connected between two sources u1 and u2. It is Applicant's contention that Kegel does not describe "a pair of

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unipolar control circuits wherein one of said unipolar control circuits is connected between one of said current sources and a current input to said motor and the other unipolar control circuit is connected between said other current source and another input to said motor.” Kegel does not in any way teach or suggest modifying its circuitry to have a pair of unipolar control circuits. Furthermore, Applicant contends that if Kegel were modified to include this limitation, the operation of the device as whole would be significantly different since additional circuitry and configuration would be need that is well beyond the scope of Kegel.

The deficiencies of Kegel are not resolved by Houskamp. Houskamp discloses a command control circuit connected to two voltage supply sources. See Houskamp, Fig. 2, element 103,  $V_c$ ,  $-V_c$ . Houskamp does not teach or suggest having a pair of unipolar control circuits as required by claim 1 of the present application. Furthermore, if one skilled in the art were to modify the Houskamp invention to have a pair of unipolar control circuits, such a modification would certainly alter the operation to the circuitry as presently disclosed in Houskamp. Therefore, neither Kegel or Houskamp in combination or standing alone render claim 1 of the present application obvious. Therefore, Applicant respectfully requests Examiner to remove the 35 U.S.C. § 103(a) rejection of claim 1.

With respect to the Office Action’s rejection of claim 2, Applicant hereby incorporates the arguments made with respect to claim 1 above. Both Kegel and Houskamp clearly only incorporate the use of one control circuit connected to two power sources. Claim 2 clearly calls for at least a pair of unipolar control circuits with each of the control circuits being substantially identical. Since both Kegel and Houskamp fail with respect to rendering claim 1 obvious, they will also fail with respect to rendering claim 2 obvious. Applicant respectfully requests removal of the 35 U.S.C. § 103(a)

rejection of claim 2. More particularly, Kegel and Houskamp fail to teach, suggest or render obvious at least a pair of unipolar control circuits as set forth above.

With respect to claim 9 of the present application, Applicant also traverses the rejection. Claim 9 adds a further limitation where "...at least one of said pair of unipolar control circuits conducts current to complete the circuit to allow the said motor to operate." Once again, Applicant incorporates the remarks made with respect to claim 1 above and maintains that these remarks also patentably distinguish claim 9 over the patents cited. Claim 9 clearly further defines "at least one pair of said unipolar control circuits" that conducts current to complete the circuit and allow the motor to operate. As stated above, both Kegel and Houskamp fail to have a pair of unipolar control circuits and since each of these references fails to, either alone or in combination, render claim 1 obvious, they will likewise fail to render claim 9 obvious, particularly with the added limitation. Applicant respectfully requests removal of the 35 U.S.C. § 103(a) rejection of claim 9.

With respect to the rejection of claim 11, the rejection will fail since claim 11 is dependent on claim 1. Claim 11 of the present application further defines a motor control circuit "wherein current is primarily conducted through said motor." Therefore, it is submitted that both Kegel and Houskamp fail to render claim 11 obvious. As set forth above, the references fail to render a pair of unipolar control circuits obvious. Therefore, the references likewise fail to render the combination of these features combined with those in claim 11 obvious. Applicant respectfully requests the Examiner to reconsider and to remove the 35 U.S.C. § 103(a) rejection to claim 11.

Applicant respectfully submits that the 35 U.S.C. § 103(a) rejections of claims 1, 2, 9 and 11 as set forth in the Office Action have been overcome in view of the amendments and remarks set forth above. It is respectfully submitted that each of these

claims and any claims dependent thereon are properly allowable. A Notice of Allowability as to these claims is respectfully requested.

**Allowable Matter**

The Office Action objected to claims 3-5, 8 and 10 for being dependent upon a rejected base claim. The Office Action further indicated that these claims would be allowable if rewritten in independent form to include all of limitations of the base claim and any intervening claims. Applicant now submits new claims 12-18 which include all of the subject matter of claims 3-5, 8 and 10 and includes all of the limitations of the base claim (i.e., claim 1) and any intervening claims. Applicant now respectfully requests allowance of new claims 12-18.

**CONCLUSION**

It is respectfully submitted that in view of the above amendments and remarks the claims 3-5, 8 and 10, as amended, are patentably distinguishable because the cited patents, whether taken alone or in combination, do not teach, suggest or render obvious, the present invention. Therefore, Applicant submits that the pending claims are properly allowable, which allowance is respectfully requested.

The Examiner is invited to telephone the Applicant's undersigned attorney at (248) 364-4300 if any unresolved matters remain.

Respectfully submitted,

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